



BULLETIN

OF THE

*Massachusetts  
School of Optometry*

BOSTON 15, MASSACHUSETTS



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# MASSACHUSETTS SCHOOL OF OPTOMETRY

FOUNDED 1894

*Announcement of*

Pre-Professional and Professional Courses in

*Optometry*

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285 HUNTINGTON AVENUE                    BOSTON 15, MASS.

#### LECTURE ROOMS AND LABORATORIES:

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#### CLINICAL BUILDING:

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## OPTOMETRY

**O**PTOMETRY is the science of sight. It is defined as the science and art devoted to the examination of the eyes, the analysis of ocular functions, and the employment of preventive and corrective methods and agents for the relief of visual and ocular anomalies.

Optometrists are trained to realize that the eyes are not merely optical instruments but that they are, in every sense, members of the human body. Knowledge of the eyes cannot remain apart from knowledge of the body. An adequately trained optometrist must be an expert in all matters pertaining to vision and must have a knowledge of ocular anatomy, physiology, and pathology.

The great service rendered by the optometrist is to enable the patient not only to see clearly, but also to see with comfort and efficiency. To this end the optometrist is, therefore, trained:

1. To ascertain the absence or presence of visual defects and to adapt lenses to correct, remedy, or relieve abnormal conditions.
2. To determine the presence or absence of abnormal conditions in focusing and fixating at near distances and to adapt remedial measures to correct, remedy, or relieve these abnormal conditions.
3. In the adaptation of lenses, prisms, and the use of orthoptic training or other coordinating exercises to correct, remedy, or relieve the effects caused by any defect or abnormal condition of the eye or of the two eyes in associated vision.
4. In the development and re-education of the visual skills, thus increasing visual efficiency and rehabilitating many who otherwise would be handicapped.

## ORGANIZATION AND PURPOSE

The Massachusetts School of Optometry was established in 1894 as the Klein School of Optics by the late August A. Klein, M.D. In 1909 the Massachusetts School of Optometry was founded and conducted under the leadership of the late Theodore F. Klein, O.D. The school is chartered by the Commonwealth of Massachusetts and administered by a Board of Trustees as a non-profit educational institution for the advancement of optometrical education.

The course extends over a period of four academic years and the curriculum is planned to emphasize the general training of the students for the practice of optometry, to indoctrinate its matriculants with the ideals of optometry, and to equip them for the successful and ethical practice of optometry.

## CLINICS

The Massachusetts Optometric Clinic is operated by the Massachusetts School of Optometry. The clinic building, located at 472 Commonwealth Avenue, in the heart of Boston's medical center, is especially well-adapted for clinical practice.

The clinic is equipped with a variety of modern instruments enabling the senior students, serving as internes, to become familiar with all types of optometric instrumentation.

The following clinics are maintained: refraction; visual training and orthoptics; visual field study; ocular pathology; and subnormal vision.

In addition to the regular out-patient clinic, senior students attend clinics at the Refraction Department of the Boston Evening Clinic and Hospital, Orthoptic Department of the Boston Dispensary, and conduct visual-screening surveys in schools, institutions, and community centers. Numerous social agencies in greater Boston refer patients to the clinic for complete eye and visual service.

## LIBRARIES

The library of the Massachusetts School of Optometry contains the essential reference books in the basic, biological, optical, ophthalmological, and optometrical sciences, as well as in general medicine, together with a collection of reprints and current periodicals. Students have access to the library and may borrow books according to library regulations.

Students also have access to the facilities of the Boston Public Library and the Boston Medical Library for general reference and study.

## REQUIREMENTS FOR ADMISSION

Applicants shall have completed a four-year college preparatory course of at least fifteen units with certified grades in an approved\* high or preparatory school. This course must include the following:

The rest of the units are to be made from other courses given during a college preparatory course in high school.

\*Approved by College Entrance Board.

These formal requirements are necessary and desirable as they tend to provide all entering students with a common ground upon which the first year of the school curriculum can be based. Academic credits alone are not an adequate indication of a student's ability to profit by professional education. Consequently, the Committee on Admissions takes into consideration aptitude, personality, and mental ability. In this way the school seeks to select for its student body those who not only meet the academic admission requirements, but those who also give promise of acquitting themselves creditably in the training program and of being useful members of the profession of optometry after graduation.

## ADMISSION WITH ADVANCED STANDING

Advanced standing is granted to applicants who have completed and received credit for at least one year of study in an approved college or university in the subjects of the freshman curriculum. Applicants seeking admission with advanced standing must submit credentials from the college from which credit is claimed.

Applicants transferring from another college of optometry may receive credit for the equivalent courses toward the work of the second year on the basis of an official transcript from an accredited college of optometry provided he is eligible to continue at that college. An applicant so admitted must satisfactorily complete the work of the last two years in residence at the Massachusetts School of Optometry.

## PROCEDURE FOR ADMISSION

There is only one entry date each year for new students. (See calendar.)

1. Application for admission must be filed on forms provided by the school together with a small unmounted photograph of the candidate.
2. A complete record of high school and college work completed must be sent directly from each institution attended. All credentials become the property of the school and are kept on permanent file.
3. Each applicant must submit a medical certificate of a thorough physical examination by a registered physician.
4. Credentials submitted for entrance will be evaluated by the Committee on Admissions which reserves the right to reject any applicant.
5. Upon notification of acceptance, applicants are required to submit the matriculation fee of \$10 (not refundable) in advance of the registration date.

6. Every student must report in person at the school on the dates specified for registration. (See late registration)

## **LATE REGISTRATION**

While late registration will be permitted up until the end of the first week after the specified registration date, absences so incurred will not be excused and a late registration fee will be charged at the rate of one dollar per day up to a maximum of \$6.

## **WITHDRAWAL**

A student who desires to withdraw from the school may apply to the Dean for permission to withdraw in good standing. If a student leaves the school at any time after the beginning and before the end of the school year without communicating with the Dean or Registrar, his record will be marked to indicate failure in all courses for the trimester from which he has withdrawn.

Permission to withdraw in good standing is granted only to students who are forced to do so for good and sufficient reasons.

A student who has been granted a withdrawal from the school may be reinstated subsequently, provided not too long a time has elapsed and provided further that changes in the curriculum do not render such re-admission impracticable. Decisions in all cases rest with the Committee on Admissions and Promotions.

## **SCHEDULE OF FEES\***

Tuition fee: \$400 per academic year.

Matriculation fee: \$10 (payable only once by new students)

Microscope fee: \$5 per year (not refundable) (Students owning microscopes are permitted to use same in microscopic laboratory courses)

Special and re-take examination fee: \$2 per examination

Late registration fee: \$1 for each day's delay in registering up to a maximum of \$6. (See late registration)

Graduation fee: \$15

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\*All fees are subject to change at any time at the discretion of the Board of Trustees.

Publication fee: \$2 per year

Student Physical Examination fee: \$5 (payable only once by new students)

Duplicate transcripts: (after the first) \$1 each

## REFUNDS

The school provides all instruction and accommodation on an academic term basis; therefore, no refunds are granted except in cases where students are compelled to withdraw on account of personal illness or to enter the armed forces of the nation. When a refund is credited for withdrawal in good standing, such refund is computed from the day upon which the notice for permission to withdraw is received. Dishonorable dismissal or expulsion does not entitle the student to any refunds.

## PERSONAL EQUIPMENT AND TEXTBOOKS

Each student is required to purchase for his individual use all the prescribed materials, textbooks, laboratory manuals, instruments, and equipment at an estimated cost of \$40.00 in the first year, \$125.00 in the second year, \$60.00 in the third year, and \$60.00 in the fourth year.

The faculty reserves the right to make such additions and changes in the list of prescribed textbooks, instruments, and equipment as are deemed advisable.

## MARKING SYSTEM

Examinations are held at the end of each trimester.

Grades will be reported on the basis of the numerical values obtained.

90 - 100 Excellent

70 - 79 Average

80 - 89 Above average

60 - 69 Conditioned

Below 60 Failure

Inc. Incomplete in laboratory exercises

On the basis of the trimester examinations, two failures in one course during the academic year constitutes a failure in the course. To receive credit in a course an average of at least 70 percent must be attained. A passing mark in every course must be earned in each year of the curriculum before the student is permitted to undertake the courses of the next year. Students receiving a condition in a course are permitted to take a make-up examination in the course in which the condition is incurred. Failure to

remove the condition after re-examination in the course will be considered a failure. Students failing one or more courses must apply in writing to the Committee on Academic Affairs for permission to re-enter the school. Any student who fails in two successive years will not be permitted to re-enter the school. No grades are issued until all financial obligations to the school are discharged.

## RE-EXAMINATIONS

Students receiving a condition (60 - 69) in an examination may apply for permission to be re-examined except in the case of final examinations. Re-examinations in final examinations are offered only on the recommendation of the instructor. No re-examinations are offered to students receiving a failure grade (below 60). Application for re-examination must be presented in writing within one week from the date on which the grades have been received by the student. A two dollar (\$2) fee is charged for every re-examination. This obligation will not be paid by the Veterans Administration. No grade higher than 70 will be credited for any re-examination. Any student who has in the opinion of the Committee on Academic Affairs definitely proven his inability to fulfill the academic requirements of the school, will be advised to withdraw.

## ATTENDANCE

Number of absences allowed: a student may be absent from class or laboratory a number of times per trimester equal to the number of times the class or laboratory is held per week. Each tardiness is counted as one-half absence. Tardiness in excess of fifteen minutes constitutes an absence.

Absence during the first and last weeks of a trimester and absence immediately preceding and immediately following a school holiday will be counted as double absences.

Students failing to comply with the rules of attendance and who have exceeded the allowable absences without good cause will not be permitted to take examinations and will therefore receive a failure in the course from which they have excessively absented themselves.

A special examination is offered, upon request, to students for excusable absence from examination. Failure to be examined by special examination is an automatic failure in the course. A special examination fee of two dollars (\$2) is charged per examination.

Failure to complete a laboratory course will constitute an incomplete. The incomplete may be removed by completing the work at the convenience of the laboratory instructor. This work must be made up before the end of the following trimester.

## CONDITIONS LEADING TO GRADUATION

1. A 70 or better grade must be earned in each course of each academic year and a general average of 75 for all courses in the curriculum.
2. Candidates for graduation must have passed all final examinations of the senior year with 70 or better grades.
3. All clinical work must have been completed.
4. Credit for all courses in the curriculum must have been earned by regular enrollment and attendance in this school or by transfer of credits satisfactorily earned in an accredited educational institution.
5. Due to the differences in curricula of the different schools of optometry, the last two years must have been successfully completed in this school.
6. All financial obligations to the school must be met.
7. All rules and regulations of the school must have been complied with.
8. Graduation with honors is conferred upon students in the graduating class for distinguished scholarship. Students who have earned a grade average of from 95 to 100 receive Summa Cum Laude; those who have earned a grade average of 90 to 95 receive Magna Cum Laude; and those who have earned a grade average of 85 to 90 receive Cum Laude.
9. All candidates for graduation must be approved by the Committee on Admissions and Promotions.

## REQUIREMENTS FOR PRACTICE

Inasmuch as the optometry law of each state fixes the requirements for examination for licensure, it will be well for the prospective optometry student to acquaint himself with the requirements of the state wherein he intends to practice. This information can be obtained by communicating with the Secretary of the State Board of Registration in Optometry.

## POLICY ON CHANGES OF PROGRAM

The school reserves the right to withdraw, modify, or add to the courses offered or to change the order or content of courses.

The school reserves the right to change the requirements for graduation, tuition, and fees charged, and other regulations. However, no change in tuition and fees at any time shall become effective until the school year following that in which it is announced.

Any changes in policy shall be applicable to all students in the school, including former students who may re-enter.

# CURRICULUM

## FIRST YEAR

	Lecture	Laboratory		Lecture	Laboratory
Mathematics	5	-	Theoretical Optometry I	3	2
Zoology	4	2	Ophthalmic Optics I	2	2
Physics	4	2	Physiological Optics I	3	2
Chemistry	3	3	Geometrical Optics I	4	2
English	3	-	Psychology	2	-
	—	—	General Anatomy and Physiology	4	1
	20	19		—	—
	7	1		19	9

## THIRD YEAR

	Lecture	Laboratory		Lecture	Laboratory
Theoretical Optometry II	4	5	Ocular Pathology	3	1
Ophthalmic Optics II	3	2	Medical Ophthalmology	1	-
Physiological Optics II	3	2	Theoretical Optometry III	5	5
Geometrical Optics II	3	2	Ophthalmic Optics III	3	2
General Pathology	2	-	Physiological Optics III	1	1
Ocular Anatomy and Physiology	3	-	Physical Optics	1	1
General and Ocular Histology	1	2	Optometrical Ethics, Economics, and Jurisprudence	2	-
	—	—	Applied Optometry	4	-
	19	13	Visual Training and Orthoptics	2	-
	8	2	Contact Lenses (Third Trimester)	2	-
	—	—		—	—
	22	10			

## DESCRIPTION OF COURSES

### Mathematics

The course is designed to include the following: a brief, comprehensive review of elementary geometry and elementary algebra; quadratic equations; variation; graphical analysis; trigonometry, including logarithms, functions of multiple angles, and inverse trigonometric functions; and an introduction to analytic geometry and calculus. 5 hours lecture.

### Remedial English

This course will present the principles of effective study and learning and will provide exercises to correct students' errors and weaknesses in written composition. 3 hours lecture.

### Physics

This is a first-year college physics course adapted to meet the needs of the optometry student. It includes the study of basic measurements, vectors, work and energy, laws of fluids, simple harmonic motion, magnetism, electricity, wave motion, sound, and fundamentals of light. The course is supplemented by laboratory exercises and demonstrations. 4 hours lecture; 2 hours laboratory.

### General Zoölogy

Lectures: Representative invertebrate and vertebrate animals are studied in detail with emphasis upon physiological functions and comparative anatomy. Basic principles of genetics and organic evolution are also included in the course. 4 hours lecture.

Laboratory study: Microscope and dissection work are carried out by each student throughout the year. Dissection work includes the earthworm, crayfish, perch, frog, and foetal pig. 2 hours.

### Chemistry

This course in Inorganic Chemistry comprises the essential principles and theories of chemical science and the descriptive chemistry of the more common elements and their important compounds. The purpose of this course is to give to the student of optometry so thorough a grounding in the fundamentals of chemistry that he will possess a working knowledge of the science and, additionally, will be oriented upon the relationships subsisting between the sciences of chemistry and optics. 4 hours lecture; 2 hours laboratory.

## General and Visual Psychology

The aim of this course is to acquaint the student with the fundamental facts and theories of psychology. The course is largely confined to human psychology. This emphasis enables the student to obtain a comprehensive view of human nature.

The course deals with a brief history of psychology and is followed with a study of the various schools of psychology. Sensory equipment with special emphasis on sight, the nervous system, and motor equipment are discussed. The study of human urges, motivation, mental conflict, formation of habits, attending and perceiving, remembering and anticipating, thinking and intelligent adjustment follow. The course ends with a discussion of personality and its social setting. 2 hours lecture.

## General Anatomy and Physiology

This course includes the study of the essential features of human anatomy and physiology presented through lectures, practical demonstrations with anatomical specimens, skeleton, models, and charts. The course is supplemented by laboratory exercises including experiments and studies of blood circulation, measurements of blood pressure, blood physiology, and some blood chemistry, including the study of action currents by means of electro-cardiographs, frog and turtle heart experiments, experiments in physiology of nerves and muscles, action of digestive enzymes, urinalysis. 4 hours lecture; 1 hour laboratory.

## Ocular Pathology

This course aims to give the student careful and detailed instruction in the recognition of pathological conditions of the eyeball and its appendages and the differentiation between healthy and abnormal states. The didactic lectures are supplemented by observing pathology cases as demonstrated in the clinic under the direction of a physician. The laboratory work consists of lantern and microscopic slides illustrating various pathological conditions. 3 hours lecture; 1 hour laboratory.

## Medical Ophthalmology

The aim of this course is to give the student a thorough knowledge of the ocular manifestations of systemic disorders. The course includes such subject matter as infections and infectious diseases, tuberculosis, virus infections, fungus infections, focal infections, drug and chemical intoxications, diseases of the nervous system, blood diseases, nutritional diseases, and diseases of the cardio-vascular system. 1 hour lecture.

## Ocular Anatomy and Physiology

The purpose of this course is to give the student a thorough knowledge of the anatomy and physiology of the eye and its appendages. It consists of lectures, demonstrations, lantern slides, charts, and models. 3 hours lecture.

## General and Ocular Histology

The purpose of this course is to give the student a knowledge of general histology with a detailed knowledge of the structures of the ocular region. The cell and fundamental tissue are considered basic and of primary importance in general and ocular anatomy and pathology. The lectures are supplemented by laboratory work including the study of microscope and lantern slides and the dissection of animals' eyes. 1 hours lecture; 2 hour laboratory.

## General Pathology

This course serves to acquaint the student with the fundamentals of general pathology including bacteriology, immunology, and pharmacology. The subject matter includes the study of inflammation, repair, regeneration, retrograde changes, disturbances of circulation, contagious diseases, chemical poisons, vitamin deficiencies, endocrines, blood studies, disturbances of growth, nervous system and gastro-intestinal tract. 2 hours lecture.

## Applied Optometry

Procedure in case analysis is covered, paying particular attention to symptomatology, interpretation of the results of tests, syndromes, formation of diagnostic units, etiology, and corrective procedures. Clinical conference periods are devoted to the discussion and analysis of various cases examined in the clinic. This course also includes instruction in contact lens fitting, subnormal vision devices, and visual training and orthoptics. 6 hours lecture. (8 hours in third trimester.)

## Geometrical Optics I

A general introduction to the study of optics. It treats of the fundamental principles and methods of geometrical optics underlying such subjects as lights, shadows, photometry, laws of reflection and refraction, reflection at curved surfaces, refraction at spherical surfaces, prisms, infinitely thin lenses. The lectures are supplemented by laboratory exercises and demonstrations. 4 hours lecture; 2 hours laboratory.

## Geometrical Optics II

A direct continuation of Geometrical Optics I. Includes the study of Gaussian and Newtonian forms of lens equation, equivalence of thin lenses,

optical instruments, entrance and exit pupils, resolving and magnifying power of instruments, thick lenses, thin and thick compound systems, thin and thick prisms, achromatic and aplastic systems. The course is supplemented by laboratory exercises and demonstrations. 3 hours lecture; 2 hours laboratory.

### Theoretical Optometry I

This course is designed to prepare the student for actual clinical practice. The subjects presented are introductory in nature and serve to orientate the student. The course includes history of optometry, value of optometry to mankind, nomenclature, terminology, definitions, measurement of vision, objective refraction methods, subjective refraction methods, check tests, contents of the trial case, ophthalmoscopy supplemented by a large variety of lantern slides illustrating physiological and pathological variations from the normal, and the inter-relationship of accommodation and convergence. This course is supplemented by demonstrations and practice exercises in all phases of instrumentation and clinical practice of tests. 3 hours lecture; 2 hours laboratory.

### Theoretical Optometry II

A direct continuation of Theoretical Optometry I. Includes the study of refractive and muscular anomalies, accommodation and convergence reserves and relationship, external examining, history taking, symptomatology, etiology, stereopsis, and visual skills. Special emphasis is laid on the important features of a complete examination by methods of optometry. This course is supplemented by demonstrations and practice exercises in preparation for actual clinical practice on patients in the clinic. 4 hours lecture; 5 hours laboratory.

### Theoretical Optometry III

A direct continuation of Theoretical Optometry II. Includes the study of the philosophy of tests conducted in routine examining from the standpoint of diagnosis and corrective procedure, visual field study, strabismus, and special devices. 5 hours lecture; 5 hours laboratory.

### Optometrical Ethics, Economics, and Jurisprudence

The course is designed to instruct the student of optometry in the meaning of professionalism and the standards of professional conduct. A study of the legal and ethical codes of optometry is made. Problems of the legal and economic position of the optometrist are studied. Consideration is given to office practice, patient control, and inter-professional relationships. 2 hours lecture.

## Physiological Optics I

A study of the functions of the various parts of the eye associated with the phenomenon of vision, including refraction and refractive errors, accommodation, retinal images, the schematic eye, catoptric images, aberrations, entoptic phenomena, and the optics of ophthalmometry, ophthalmoscopy, and retinoscopy. The course is supplemented by a series of laboratory exercises and demonstrations on subject matter covered in the classroom. 4 hours lecture; 2 hours laboratory.

## Physiological Optics II

A continuation of Physiological Optics I dealing with the retina and retinal stimuli, Fechner's Law, the color sense, theories of vision, binocular vision, Listing's Law, accommodation and convergence, stereopsis, perception of movement, and optical illusions. The course is supplemented by a series of laboratory exercises and demonstrations on subject matter covered in the classroom. 3 hours lecture; 2 hours laboratory.

## Physiological Optics III

Additional study of binocular vision stressing such disorders as heterophorias, strabismus, and aniseikonia, with a general review of Physiological Optics I and II. The course is supplemented by a series of laboratory exercises and demonstrations on subject matter covered in the classroom. 1 hour lecture; 1 hour laboratory.

## Ophthalmic Optics I

This course presents a description of all ordinary forms and types of modern, single-vision ophthalmic lenses. Prism work, axis marking, and decentration are thoroughly discussed. A laboratory course is synchronized with classroom work so that the student may apply theoretical principles taken up in classroom work. 2 hours lecture; 2 hours laboratory.

## Ophthalmic Optics II

Continuation of Ophthalmic Optics I presenting imbalances, fitting and adjusting of eyewear, theory and use of laboratory instruments such as lens measure, lensometer, axometer, etc. Surface grinding description, lining up, and calculations for lens thickness are thoroughly discussed. Laboratory course is given in conjunction with class work. 3 hours lecture; 2 hours laboratory.

## Ophthalmic Optics III

Continuation of Ophthalmic Optics II. Discussion of all types of special lenses, such as Iseikonic, corrected, high-index glass, tinted lenses, bifocals, and trifocals. Laboratory course is given in conjunction with class work. 3 hours lecture; 2 hours laboratory.

## Physical Optics

This course deals with the fundamental facts connected with such subject matter as theories of light, velocity of light, interference, diffraction, polarization, double refraction, and spectroscopy. The lectures are supplemented by demonstrations. 1 hour lecture; 1 hour laboratory.

## REQUIRED TEXTBOOKS

### Optometrical Sciences

#### Theoretical Optometry and Applied Optometry

Maxwell, *Outline of Refraction*

Peter, *Extra-Ocular Muscles*

Atkinson, *Oculo-Refractive Cyclopedia and Dictionary*

Peter, *Principles and Practice of Perimetry*

Cantonnett and Fillozat, *Strabismus*

Obrig, *Contact Lenses*

### Biological Sciences

#### General Anatomy and Physiology

Tuttle, *General Anatomy and Physiology*

#### Zoology

Hegner, *College Zoology*

Hyman, *A Laboratory Manual for Elementary Zoology*

Baumgartner, *Laboratory Manual of the Fetal Pig*

#### Ocular Pathology

Parsons, *Diseases of the Eye*

Berens and Zuckerman, *Diagnostic Examination of the Eye*

#### Ocular Anatomy

Wolff, *Anatomy of the Eye and Orbit*

#### Medical Ophthalmology

Tassman, *Eye Manifestations of Internal Diseases*

#### Psychology

Vaughan, *General Psychology*

Dorcus and Shaffer, *Textbook of Abnormal Psychology*

#### Physiological Optics

Zoethout, *Physiological Optics*

## Physical Sciences

### Mathematics

Mullins and Smith, *Freshman Mathematics*  
Smith, Reeve, Morss, *Exercises and Tests in Intermediate Algebra*  
Smith, Reeve, Morss, *Exercises and Tests in Plane Geometry*

### Physics

Millikan, Gale, Edwards, *A First Course in Physics for Colleges*  
Fuller, Brownlee, Baker, *Experiments in Physics*

### Chemistry

Timm, *General Chemistry*  
Timm, *Laboratory Exercises in General Chemistry*  
Deming, *A Laboratory Manual of College Chemistry*

### Geometrical Optics

Southall, *Mirrors, Prisms, and Lenses*

### Ophthalmic Optics

Obrig, *Modern Ophthalmic Lenses*

## Social Sciences

### English

Giles and Henry, *Remedial English*

### Optometrical Ethics, Economics, and Jurisprudence

Brucker, *The Story of Optometry*

### English

- From Reading a "Book" Kierkegaard
- Concerning Words -
- Review Exercise in "Book" -
- Walters Guide to "Book" -



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